

CLAIMS:

1. A method of binarizing images containing linear structures, and particularly images of prints from the skin, characterized in that areas are determined that are each distinguished by a preset approximate direction of the structures and in that the areas of the image that are determined are each filtered with a Gabor filter adapted to the given direction.

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2. A method as claimed in claim 1, characterized in that the determination of the areas takes place, tile by tile of the tiles into which the image is divided, with further Gabor filters of corresponding directions.

10 3. A method as claimed in claim 2, characterized in that four further Gabor filters are used.

15 4. A method as claimed in claim 3, characterized in that the directions of the further Gabor filters are determined by angles of 22.5°, 67.5°, 112.5° and 157.5° to an edge of the image.

20 5. A method as claimed in any of claims 2 to 4, characterized in that, for the determination of the areas from the filter responses tile by tile of the tiles into which the image is divided, a variance is derived in each case from the given filter response and in that tiles having a variance that is greater than a preset threshold value are assigned to the given area.

25 6. A method as claimed in claim 5, characterized in that the derivation of the variances is performed for tiles that overlap one another.

7. A method as claimed in claim 6, characterized in that, at a resolution of approximately 500 dpi, the size of the tiles used for deriving the variance is 16 x 16 pixels, which tiles are each processed in steps of eight pixels.

8. A method as claimed in any of the foregoing claims, characterized in that the pixels are adapted to the environment, as predominant at the time, of the given pixel by smoothing filers.

5 9. A method as claimed in any of the foregoing claims, characterized in that the surface area of the areas so far determined is established and in that areas whose surface area is of less than a preset size are suppressed.

10 10. A method as claimed in claim 9, characterized in that the surface area is established by tracing the outlines of the areas by means of an edge-tracing algorithm.

11. A method as claimed in any of claims 2 to 10, characterized in that tiles for which, when direction was determined, the response of one of the Gabor filters gave a recognizable direction, are filtered with a Gabor filter adapted to this direction, in that tiles 15 for which, when direction was determined, the responses of the Gabor filters gave two adjoining recognizable directions, are filtered with a Gabor filter adapted to the mean direction, and in that tiles for which no direction was determined or for which, when direction was determined, the responses of the Gabor filters gave two non-adjacent directions, are not filtered.

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12. A method as claimed in any of the foregoing claims, characterized in that the image is binarized prior to the filtering with Gabor filters adapted to direction.

25 13. A method as claimed in claim 12, characterized in that, to allow the image to be binarized, a threshold value is derived from a histogram of the image covering those pixels in which there is clear information on direction, and in that the threshold value is selected in such a way that half of the pixels are lighter than the threshold value and half are darker.

30 14. A method as claimed in either of claims 12 or 13, characterized in that further binarization takes place after the filtering with Gabor filters adapted to direction.

15. System for binarizing images containing linear structures, and particularly images of prints from the skin, using a method according to one of the preceding claims.